

Attorney Docket No.: PENN-0754
Inventors: Scott L. Diamond
Serial No.: 09/763,982
Filing Date: April 25, 2001
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This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1-3 (canceled).

Claim 4 (currently amended): A method of delivering selected molecules to nuclei of eukaryotic cells comprising contacting eukaryotic cells with selected molecules contacted with a nuclear targeting peptide containing a nonclassical, nuclear localization signal with the proviso that the nuclear targeting peptide does not contain a classical nuclear localization signal, does not interact with importin- α or importin- β and interacts with transportin to mediate nuclear pore targeting and import of molecules into the nucleus of the cells.

Claim 5 (canceled).

Claim 6 (currently amended): The method of claim ~~5~~ 4 wherein the nuclear targeting peptide comprises SEQ ID NO:3.

Claim 7 (currently amended): A compound comprising:

(a) a cationic peptide scaffold of less than 124 amino acids in length; and

(b) a nuclear targeting peptide containing a non-classical nuclear localization sequence which does not interact with importin- α ~~and~~ or importin- β , said cationic peptide scaffold being conjugated to said nuclear targeting peptide via a chemical linkage with the proviso that the nuclear targeting peptide does not contain a classical nuclear localization signal and interacts with

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transportin to mediate nuclear pore targeting and import of molecules into the nucleus of the cells.

Claim 8 (currently amended): A compound comprising:

(a) a cationic peptide scaffold; and

(b) a nuclear targeting peptide containing a non-classical nuclear localization sequence

which interacts with transportin but does not interact with importin- α ~~and~~ or importin- β , said cationic peptide scaffold being conjugated to said nuclear targeting peptide via a chemical linkage, wherein the nuclear targeting peptide comprises SEQ ID NO:1.

Claim 9 (currently amended): A composition comprising a peptide scaffold, a nuclear targeting peptide containing a nonclassical nuclear localization sequence and a plasmid containing a selected nucleic acid sequence with the proviso that the nuclear targeting peptide does not contain a classical nuclear localization signal and interacts with transportin to mediate nuclear pore targeting and import of molecules into the nucleus of the cells.

Claim 10 (original): The composition of claim 9 wherein the peptide scaffold is conjugated to the nuclear targeting peptide and a complex is formed between the plasmid and the conjugate.

Claim 11 (currently amended): A method for expressing a selected nucleic acid sequence in eukaryotic cells comprising contacting cells with a mixture of a selected nucleic acid sequence contacted with, a peptide scaffold and a nuclear targeting peptide containing a nonclassical nuclear localization signal with the proviso that the nuclear targeting peptide does not contain a classical nuclear localization signal and interacts with

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transportin to mediate nuclear pore targeting and import of molecules into the nucleus of the cells.

Claim 12 (currently amended): A method for expressing a selected nucleic acid sequence in eukaryotic cells comprising forming a complex between a plasmid containing the selected nucleic acid sequence and a scaffold-nuclear targeting peptide conjugate; and contacting cells with the complex with the proviso that the scaffold-nuclear targeting peptide conjugate does not contain a classical nuclear localization signal and interacts with transportin to mediate nuclear pore targeting and import of molecules into the nucleus of the cells.

Claims 13-14 (canceled).